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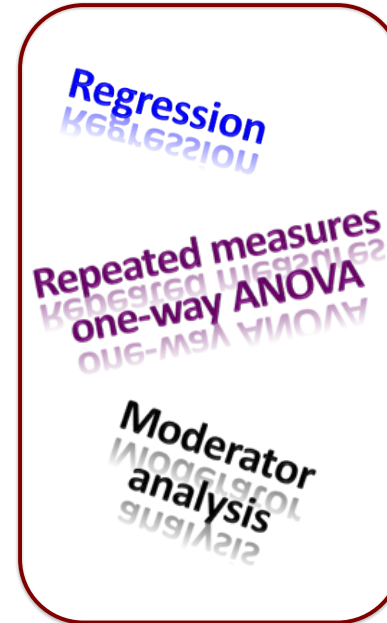
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The acceptance and experience of virtual-reality-enhanced exercise in older people

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How do older people perceive and experience exercising in a virtual environment?



Recruitment



Data collection



Measurements via
questionnaires¹⁻⁴



Statistical
analysis



Findings



The results may have important implications for exercise promotion strategies for older people.

References

1. Venkatesh et al., 2003. User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, vol. 27, pp. 425-478.

2. Jackson, S.A & Marsh, H.W., 1996. Development of validation of a scale to measure optimal experience: The Flow State Scale. *Journal of Sport and Exercise Psychology*, vol. 18, pp. 17-35.

3. Borg, G., 1970. Perceived exertion as an indicator of somatic stress. *Scandinavian Journal of Rehabilitation Medicine*. vol. 2, pp. 92-98.

4. Zijlstra, F.R.H., 1993. Efficiency in work behaviour. A design approach for modern tools., Delft University of Technology.

INTRODUCTION

Virtual-reality (VR) has great potential for use in rehabilitation and exercise contexts¹⁻⁴. Older people who exercise are generally healthier, more independent and enjoy a better quality of life compared to their sedentary peers. Given the previous evidence of advantages from VR supported physical activity programmes in different groups, the question if older people accept exercising in a virtual environment is of particular relevance.

Degree of acceptance may have important implications for future use and concordance to VR-enhanced exercise programmes. Therefore, this study investigates how older people perceive and experience virtual-reality-enhanced exercise

METHOD

Participants will take part in a six 40 minute exercise sessions over a three week period using the IREXTM VR system.

Outcome measures:

1) acceptance variables using the Modified Technology Acceptance Questionnaire⁵; (2) flow state of exercising with the IREXTM using the Flow Questionnaire⁶; (3) physical effort via the Borg Perceived Rate of Exertion Scale⁷; (4) mental effort via the Subjective Mental Effort Questionnaire (SMEQ)⁸; and (5) an overall evaluation using an open-ended question at the end of each exercise session. Statistical analysis will comprise regression, repeated measures one-way ANOVA and moderator analysis.

DISCUSSION and CONCLUSION

The findings of this study will help us to understand:

- the extent to which VR-enhanced exercise is accepted by older people,
- describe acceptance and experience before and after the programme, and throughout the six sessions, and
- identify any possible demographic explanatory factors.

The results may have important implications for exercise promotion strategies for older people.

REFERENCES

1. Trout, J. & Brett, C. 2007, "Interactive Video Games in Physical Education", *Journal of Physical Education, Recreation & Dance*, vol. 78, no. 5, pp. 29-35.
2. Hausenblas, H.A., Brewer, B.W., Van Raalte, J.L., Cook, B., Downs, D.S., Weiss, C.A., Nigg, C. & Cruz, A. 2008, "Development and evaluation of a multimedia CD-ROM for exercise during pregnancy and postpartum", *Patient education and counseling*, vol. 70, no. 2, pp. 215-219.
3. Nigg, C.R. 2003, "Technology's influence on physical activity and exercise science: the present and the future", *Psychology of Sport and Exercise*, vol. 4, pp. 57-65.
4. Nigg, C.R., Riebe, D., Rossi, J.S., Velicer, W.F. & Prochaska, J.O. 1999 "Individualized expert system interventions for adopting and maintaining physical activity.", *ACSM Special Event: Demonstrations of New Information Technology to Promote Physical Activity*.
5. Venkatesh, V., Morris, M.G, Davis, G.B. & Davis, F.D. 2003, "User Acceptance of Information Technology: Towards a Unified View", *MIS Quarterly*, vol. 27, pp. 425-478.
6. Jackson, S.A. & Marsh, H.W., 1996, "Development of validation of a scale to measure optimal experience: The Flow State Scale", *Journal of Sport & Exercise Psychology*, vol. 18, pp. 17-35.
7. Borg, G. 1970, "Perceived exertion as an indicator of somatic stress.", *Scandinavian Journal of Rehabilitation Medicine*, vol. 2, pp. 92-98.
8. Zijlstra, F.R.H. 1993, *Efficiency in work behavior. A design approach for modern tools.*, Delft University of Technology.



Figure 1: A model demonstrates the Volleyball game in a virtual-reality-enhanced exercise session.



Figure 2: The image of the model in the television screen.